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NOTICE OF ALLOWANCE AND FEE(S) DUE

27488

7590

12/16/2008

MERCHANT & GOULD (MICROSOFT)
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EXAMINER

DAFTUAR, SAKET K

ART UNIT

PAPER NUMBER

2451

DATE MAILED: 12/16/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,735	04/15/2004	Dan Teodosiu	50037.272US01	8818

TITLE OF INVENTION: EFFICIENT ALGORITHM AND PROTOCOL FOR REMOTE DIFFERENTIAL COMPRESSION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/16/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE** OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

27488 7590 12/16/2008

MERCHANT & GOULD (MICROSOFT)
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MINNEAPOLIS, MN 55402-0903

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE; address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/16/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
DAFTUAR, SAKET K	2451	709-217000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____
Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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			ART UNIT	PAPER NUMBER
			2451	

DATE MAILED: 12/16/2008

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1280 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1280 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability**Application No.**

10/825,735

Applicant(s)

TEODOSIU ET AL.

Examiner

SAKET K. DAFTUAR

Art Unit

2451

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 06/06/08.
2. ☒ The allowed claim(s) is/are 1,8,22 and 42-44.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 10/28/2004-12/04/2008
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Saket K Daftuar/
Examiner, Art Unit 2451

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with applicant assigned representative Mr. Rene Pereyra Registration Number 45,800 on December 3rd, 2008.

The application has been amended as follows:

Claim 1. (Previously Presented) A system for updating objects over a network between a local device and a remote device, the system comprising:

a remote device that is arranged to facilitate updating objects over the network, wherein the remote device comprises:

a first network connection device that is arranged to facilitate communications over the network;

a first data store that is arranged for storing a first object; and

a first processor that is coupled to the first data store and the first network connection device, wherein the first processor is configured for:

computing a first fingerprint function at every byte offset of a first object on the remote device;

chunking the first object on the remote device based on the first fingerprint function;

computing a remote signature for each chunk associated with the first object on the remote device;

generating a remote signature and chunk length list on the remote device, wherein the remote signature and chunk length list is associated with the first object;

transmitting the remote signature and chunk length list with the remote device to the network;

receiving with the remote device a request from the network for transmitting at least one updated object chunk; and

transmitting the at least one updated object chunk over the network; and

a local device in operative communication with the remote device to facilitate updating objects over the network, wherein the local device comprises:

a second network connection device that is arranged to facilitate communications over the network;

a second data store that is arranged for storing a second object; and

a second processor that is coupled to the second data store and the second network connection device, wherein the second processor is configured for:

computing a second fingerprint function at every byte offset of the second object on the local device, where the first and second objects are associated with one another, and where the first fingerprint function is matched to the second fingerprint function;

chunking the second object on the local device based on the second fingerprint function, wherein chunking the first object on the remote device is matched to chunking the second object on the local device;

computing a local signature for each chunk associated with the second object on the local device, wherein computing the local signature is matched to computing the remote signature;

generating a local signature and chunk length list on the local device, wherein the local signature and chunk length list is associated with the second object;

negotiating a chunked transmission of the remote signature and chunk length list from the remote device to the local device over the network such that bandwidth use is minimized for the transfer of the remote signature and chunk length list to the local device;

identifying differences between the first object and the second object by comparing the local signature and chunk length

list to the remote signature and chunk length list on the local device;

requesting transmission of at least one updated object chunk from the remote device when differences between the first object and the second object are identified by the local device;

receiving the at least one updated object chunk from the remote device; and

assembling a copy of the first object on the local device with the at least one updated object chunk.

Claims 2- 7. (Cancelled).

Claim 8. (Previously Presented) The system of claim 1, wherein identifying differences between the first object and the second object on the local device comprises:

comparing the remote signature and chunk length list to the local signature and chunk length list;

identifying at least one difference between the remote signature and chunk length list and the local signature and chunk length list;

mapping the at least one difference to the remote signature and chunk length list; and

identifying the at least one updated object chunk from the mapping between the at least one difference and the remote signature and chunk length list.

Claims 9 -21 . (Cancelled).

Claim 22. (Currently Amended) The system of claim 1, wherein the first processor is further configured for:

chunking the remote signature and chunk length list to provide a chunked remote signature and chunk length list;

computing a recursive remote signature for each chunk associated with the chunked remote signature and chunk length list;

generating a recursive remote signature and chunk length list with the recursive remote signatures;

chunking the local signature and chunk length list on the local device, wherein the chunking the local signature and chunk length list is matched to chunking the remote signature and chunk length list; and

wherein the second processor is further configured for: computing a recursive local signature for each chunk associated with the chunked local signature and chunk length list, wherein computing the recursive local signature is matched to computing the recursive remote signature;

generating a recursive local signature and chunk length list on the local device with the recursive local signatures and the chunked local

signature and chunk length list, wherein generating the recursive local signature and chunk length list is matched to generating the recursive remote signature and chunk length list;

negotiating transmission of the recursive remote signature and chunk length list from the remote device to the local device over the network such that bandwidth use is minimized for the transfer of the recursive remote signature and chunk length list to the local device; [[and]]

identifying differences between the recursive remote signature and chunk length list and the recursive local signature and chunk length list on the local device; and

requesting transmission of at least one updated signature chunk from the remote device when differences are identified between the recursive remote signature and chunk length list and the recursive local signature and chunk length list by the local device.

Claims 23.-41 (Cancelled).

Claim 42. (Previously Presented) The system of claim 22, wherein identifying differences between the recursive remote signature and chunk length list and the recursive local signature and chunk length list on the local device further comprises:

comparing the recursive remote signature and chunk length list to the recursive local signature and chunk length list;

identifying at least one signature chunk that is associated with a difference between the recursive remote signature and chunk length list and the recursive local signature and chunk length list;

mapping the at least one signature chunk to the remote signature and chunk length list;

and

identifying the at least one updated signature chunk from the mapping between the at least one signature chunk and the remote signature and chunk length list.

Claim43. (Previously Presented) The system of claim 1 wherein negotiating the chunked transmission of the remote signature and chunk length list from the remote device to the local device over the network further comprises:

determining a number of iterations for recursive processing based on at least one member of a group comprising:

a data size associated with the first object, a data size associated with the second object, an environmental constraint associated with the remote device, an environmental constraint associated with the local device, the characteristics of the network, a usage model associated with

the first object, and a usage model associated with the second object, a number of chunk signatures associated with the first object, and a number of chunk signatures associated with the chunked remote signature and chunk length list.

Claim 44. (Previously Presented) The system of claim 43, wherein the first processor and the second processor are further configured for executing:

a recursive procedure for processing a signature and chunk length list, comprising:

chunking the signature and chunk length list to provide a chunked signature and chunk length list;

computing a recursive signature for each chunk associated with the chunked signature and chunk length list;

generating a recursive signature and chunk length list with the recursive signatures and the chunked signature and chunk length list;

initializing the signature and chunk length list to the recursive signature and chunk length list when additional iterations are required for recursive processing; and

returning the recursive signature and chunk length list when the recursive procedure has completed the number of iterations; wherein the first processor is further configured for processing the remote signature and chunk length list with the recursive procedure on the remote device by passing the remote signature and chunk length list to the recursive

procedure as the signature and chunk length list, and by returning the recursive remote signature and chunk length list from the recursive procedure; and

wherein the second processor is further configured for processing the local signature and chunk length list with the recursive procedure on the local device by passing the local signature and chunk length list to the recursive procedure as the signature and chunk length list, and by returning the recursive local signature and chunk length list from the recursive procedure.

Claims 45.– 119 (Cancelled)

EXAMINER'S REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance: upon searching examiner has found references US Patent 6, 574, 657 to Dickinson et al and US Patent 7,099,884 B2 to Gu (hereinafter prior-art). The prior-art does not teach or disclose computing a first fingerprint function, chunking the first object on the remote device based on the first fingerprint function, generating a local recursive chunk length list and remote signature chunk length list, and comparing or computing local signature to be matched with remote signature. The prior art also does not teach or suggest computing a first and second fingerprint function at every byte offset on the local and remote device, respectively, and comparing both first and second fingerprint function. Further, the prior art failed to teach generating and computing recursive remote

signature for each chunked remote signature and chunk length list on remote device and further failed to compare recursive remote signature, remote chunked length list on the local device.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CONTACT INFORMATION

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAKET K. DAFTUAR whose telephone number is (571)272-8363. The examiner can normally be reached on 8:30am-5:00pm M-W.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Art Unit: 2451

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. K. D./

Examiner, Art Unit 2451

/John Follansbee/

Supervisory Patent Examiner, Art Unit 2451